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09/838,483	04/19/2001	Louise C. Sengupta	283014-00018-1	8925

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EXAMINER	
LEE, BENNY T	

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2817	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The disclosure is objected to because of the following informalities: Page 1, lines 17, 18, note that "4, 532, 704" should be rewritten as – 4,532,704 --. Page 2, lines 15-20, note that updated status information for patent applications "09/594,837" and "09/768,690" should be proved, where appropriate. Page 4, line 22, note that see fig. 3 should follow "40" for clarity of description; line 25, note that "the" should be rephrased as best shown in fig. 2, the for clarity of description. Page 4, line 21 and page 5, line 8, note that reference labels (56, 58, 54) need to reference – Fig. 2 --. Page 5, line 4, note that as shown in figs. 2, 3, should follow "48" for clarity; lines 21-24, for the description of fig. 6 note that – (tanδ) – should follow "loss tangent" and reference labels (78, S_{a1}, S_{a1C}) need to be correspondingly described. Page 6, line 28, note that – (see FIG. 7) – should follow "94"; line 29, note that – (see FIG. 9) – should follow "96" and "98", respectively line 32, note that "the" should be rephrased as – as best shown in fig. 8, the --. Page 7, line 8, note that – as shown in FIG. 7 – should follow "material"; line 16 note that "1320" should correctly be 132 line 20 note that in fig. 11 should follow 11-11; line 21, note that as shown in fig. 12 should follow thereon; line 24, note that the should be rephrased as --best shown in fig. 11, the line 31, note that as shown in fig. 10 should follow material. Page 8. line 16 is "PLZT" the correct acronym for lead lanthanum zirconium titanate"?

The drawings are objected to because in figs., 5, 6, note that "STRENGTHT" should be correctly spelled as – STRENGTH --. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if

only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 13, 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification fails to describe what combinations would be encompassed by the group consisting of "combinations thereof". Accordingly one skilled in the art would not have been able to ascertain which ones of the multitudes of "combinations thereof" would have been encompassed within the scope of such a limitation..

Therefore, one skilled in the art would not have been enable to make (i.e. the full scope of combinations) and use the invention intended by applicant's without resorting to undue experimentation.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 8, 9, 14, 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 8, 9, 12, note that it is unclear how a gap as recited in these claims relate to the gap as recited in independent claim 1 from which these claims ultimately depend.

In claims 13, 14, note that in view of the lack of adequate written description as to what constitutes "combination s thereof", one of ordinary skill in the art can not determine (i.e.. even in light of the specification) the proper scope of coverage intended by the limitations "combination thereof".

[redacted]

Claims 1, 4, 17, 18, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Vendik et al paper (of record) in view of Dimos et al.

As previously described, the Vendik et al paper discloses in section 6 and at fig. 14 thereof, a tunable fin line phase shifter mounted within a waveguide. [redacted] The tunable fin line phase shifter comprises a substrate having a voltage adjustable thin film ferroelectric (e.g. BSTO)

layer disposed thereon and further includes first and second conductive layers disposed on the ferroeletric layer and which are separated by a gap there between. Note that the Vendik et al fin line phase shifter differs from the claimed invention in that the gap dimension therein is not specified (i.e. between 2 and 50 microns).

Dimos ret al discloses with respect to fig. 9 therein a tunable ferroelectric varactor configuration including a substrate with a ferroelectric layer (e.g. BSTO, etc) disposed thereon and with two conductive layers disposed over the ferroelectric's layer and having therebewteen a gap of 11 to 16 microns (see col. 8, l. 55). Moreover, as described at col. 1 ls 60-65, objectives of the inventive structure include a high degree of tunability and low insertion loss. Furthermore, as described at col. 3, ls 22-36, the ferroelectric materials used are characterized as having surprising and unexpected properties (e.g. when used at room temperature operation).

Accordingly it would have been obvious in view of the references, taken as a whole to have modified the gap spacing in the fin line phase shifter of the Vendik et al paper to have been 11 to 16 micron which would have been in the 2 to 50 micron range claimed, such as explicitly taught by Dimos et al. Such a modification would have been considered an obvious optimization of such gap spacing given that the general conditions (i.e.. both references pertain to like structurally configured devices capable of providing at room temperature low insertion loss and excellent tunability) have been met by the prior art art would have only required ordinary skill in the art, thereby suggesting the obviousness of such a modification. Moreover, note that the tunable ferroelectric varactor in fig., 9 of Dimos et al corresponds in structure to a tunable ferroelectric slot

line configuration as described in section 2.4 of the Vendik et al paper.. Since the Vendik et al paper explicitly discloses that such a tunable slot line form the basis for a fin line structure (i.e. section 6, fig. 14); obviously then that the ferroelectric's varactor of Dimos et al would have been compatible with the tunable fin line phase shifter of the Vendik et al paper. Furthermore with respect to claim 17, as an obvious consequence of the combination set forth above the resultant ferroelectric's layer will have a dielectric constant of at least 2000 as described by Dimos et al (see col. 3, ln 30).

Claims 5, 10, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the preceding rejection as applied to claim1 above, and further in view of the Bates et al reference (of record).

The above rejection meets the claimed invention except for the second conductor being an RF ground (cl. 5) the first conductor being insulated from the waveguide while the second conductor is electrically connected to the waveguide (Cl. 10) and an impedance matching section in the gap (cl. 11).

Bates et al discloses a fin line structure comprising first and second electrodes (4, 5) having a gap (3) therein which includes tapered end sections for impedance matching purposes. Note that as evident from fig. 2, the electrode (5) is in direct electrical contact with the waveguide housing by insulating layer (8) to provide low frequency isolation.

Accordingly, it would have been obvious in view of the references, taken as a whole to have further modified the conductive electrodes of the combination to have included the tapered sections (for impedance matching purposes) the isolated electrode

(for low frequency isolation) and the direct connection of the electrode to the waveguide (for RF ground), as taught by Bates et al. Such modifications would have been obvious in view of the advantages set forth above.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over the above rejection as applied to claim 1 above, and further in view of Sengupata et al (697), of record.

Note that Sengupta et al discloses BSTO-Mg0 as an exemplary tunable dielectric material.

Accordingly it would have been obvious in view of the references taken as a whole to have further modified the BSTO ferroelectric layer in the combination to have been an BSTO-Mg0 material such as taught by Sengupta et al.

Such a modification would have been obvious considered an obvious substitution of art recognized BSTO ferroelectric material, which would not have affected the basic function such material in the tunable phase-shift device of the combination, thereby suggesting the obviousness of such a modification.

Applicant's arguments filed February 14, 2004 have been fully considered but they are not persuasive. Applicants have basically argued that with respect to the Vendik et al paper the disclosure therein is non-enabling with respect the fin-line phase shifter being operable at room temperature. Applicant's points to various disclosures in the Vendik et al paper in support .of their position of non-enable ment for room temperature operation.

While the examiner respectfully disagrees that the Vendik et al paper is non-enable for room temperature operation, rather than rebut such arguments point by point the examiner has decided to provide a secondary reference (i.e.. the Dimos et al reference) which demonstrates or provides evidence that the public possessed the knowledge of using such ferroelectric devices of Vendik et al at room temperature before the date of invention by applicants irrespective of whether the Vendik et al paper is enabling or not as sanctioned by MPEP 2101.01.

The declaration under 37 CFR 1.132 filed May 27, 2003 is insufficient to overcome the rejection of claims 1, 13 based upon 35 USC 103 as set forth in the last Office action because: [redacted]

It states that the claimed subject matter solved a problem that was long standing in the art. However, there is no showing that others of ordinary skill in the art were working on the problem and if so, for how long. In addition, there is no evidence that if persons skilled in the art who were presumably working on the problem knew of the teachings of the above cited references; they would still be unable to solve the problem. See MPEP § 716.04.

Any inquiry concerning this communication should be directed to Benny T. Lee at telephone number (571)-272-1764.

Benny Lee

Lee/ds

08/24/04

BENNY T. LEE
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